BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

DOCKET NO. 2018-1-E

In the Matter of Annual Review of Base Rates for Fuel Costs for Duke Energy Progress, LLC	))))	**REBUTTAL TESTIMONY OF GEORGE V. BROWN FOR DUKE ENERGY PROGRESS, LLC**

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is George V. Brown and my business address is 400 South Tryon St., Charlotte, North Carolina, 28202.

Q. ARE YOU THE SAME GEORGE V. BROWN THAT PREVIOUSLY FILED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes, I filed direct testimony supporting Duke Energy Progress, LLC's ("DEP"" or "the Company") Distributed Energy Resource Program ("DERP") costs that are incorporated into the proposed fuel factors.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. The purpose of my rebuttal testimony is to respond to the testimony by ORS Witness Sarah Johnson regarding the calculation of the Value of NEM Distributed Energy Resources ("Value of DER") and to describe the resulting updates to Rider RNM-6.

Q. DO YOU AGREE WITH WITNESS JOHNSON'S RECOMMENDATIONS REGARDING THE COMPANY'S UPDATED VALUE OF DER, DESCRIBED ON PAGE 5, LINES 1 THROUGH 10 OF WITNESS JOHNSON'S DIRECT TESTIMONY?

A. Yes, I do. As Witness Johnson describes, the Company discovered an error in its calculation of the solar load profile after filing my direct testimony. Correcting this error slightly impacted the calculation of the Value of DER set forth on page 7 and in Table 4 of my direct testimony, as described by Witness Johnson. Those corrected calculations are set forth in a revised

Table 4 below, and are consistent with the calculations described in Witness Johnson's testimony.

Table 4: Value of NEM Distributed Energy Resource, by Component

Components of NEM Distributed Energy Resources Value	Component Value ($ per kWh) Small PV[4]	Component Value ($ per kWh) Large PV[4]
Avoided Energy Costs	$0.036169	$0.036178
Avoided Capacity Costs	$0.013446	$0.013364
Ancillary Services	$0.000000	$0.000000
T & D Capacity	$0.000000	$0.000000
Avoided Criteria Pollutants[1]	$0.000026	$0.000024
Avoided CO2 Emissions Costs	$0.000000	$0.000000
Fuel Hedge[2]	$0.000000	$0.000000
Utility Integration & Interconnection Cost	$0.000000	$0.000000
Utility Administrative Cost	$0.000000	$0.000000
Environmental Costs	$0.000000	$0.000000
Subtotal	$0.049641	$0.049566
Line Losses[3]	$0.000691	$0.000684
Total Value of NEM Distributed Energy Resources	$0.05033	$0.05025

Notes
[1] Pursuant to the Settlement Agreement reached in the Company's 2016 fuel case (Docket 2016-1-E), NOx & SOx that were previously included in marginal energy cost have been separately identified. The Company will identify other avoided criteria pollutant cost separately from marginal energy cost in future avoided cost analyses.
[2] Pursuant to the Settlement Agreement reached in the Company's 2017 fuel case (Docket No. 2016-1-E), the Company has calculated the fuel hedge value in a manner consistent with the definition according to the Settlement Agreement in Docket No. 2015-246-E, Attachment A. Because no fuel hedge exists, as calculated, there is no value to assign in the table.
[3] Line loss factors are 1.15% on on-peak marginal energy, 1.138% for off-peak marginal energy and 2.0206% for marginal capacity per DEP's updated 2018 line loss analysis.

[4] "Small PV" refers to a load shape reflecting generation installed by a lower usage residential or small commercial/industrial customer. "Large PV" refers to a load shape characteristic of generation by a customer with higher consumption requirements and applies to all other nonresidential rate schedules.

Q. ARE THERE ANY OTHER CHANGES NEEDED TO YOUR DIRECT TESTIMONY OR EXHIBITS TO REFLECT THIS CHANGE?

A. Yes, as Witness Johnson recommends, DEP has updated its Rider RNM-6 to reflect the rates described above. As a result, included in this rebuttal

testimony is a revised version of Brown Exhibit 1, which sets forth the corrected rates for the Value of DER. This change is reflected in General Provision #9.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

RENEWABLE NET METERING RIDER RNM-~~5~~6

AVAILABILITY

Available to residential and nonresidential Customers receiving concurrent service from Company, on a metered rate schedule, except as indicated under General Provisions. The renewable net energy metered (NEM) generation, which includes a solar photovoltaic; solar thermal; wind powered; hydroelectric; geothermal; tidal or wave energy; recycling resource; hydrogen fueled or combined heat and power derived from renewable resources; or biomass fueled generation source of energy, is installed on Customer's side of the delivery point, for Customer's own use, interconnected with and operated in parallel with Company's system. The generation must be located at a single premises owned, operated, leased or otherwise controlled by Customer.

Service under this Rider is closed to new participants on and after January 1, 2021, or when the statutory minimum system capacities described in S.C. Code § 58-39-130 have been reached, whichever occurs first. Customers requesting NEM service after January 1, 2021, will receive service in accordance with the NEM tariff in effect at that time. This Rider shall expire and no longer be available for NEM service on and after January 1, 2026.

GENERAL PROVISIONS

1. To qualify for service under this Rider, Customer must comply with all applicable interconnection standards and must provide, in writing, the Nameplate Capacity of Customer's installed renewable generation system. Any subsequent change to the Nameplate Capacity must be provided by Customer to Company in writing by no later than 60 days following the change.

2. To qualify for service under this Rider, a residential customer may be served on an approved residential rate schedule, but may not be served under Rider NM. The Nameplate Capacity of Customer's installed generation system and equipment must not exceed 20 kW AC.

3. To qualify for service under this Rider, a nonresidential customer may be served on an approved general service rate schedule, but may not be served on Schedules SGS-TES, TSS, TFS, LGS-RTP, LGS-CUR-TOU, CSG, CSE, GS, SFLS, SGS-TOU-CLR or Rider NM. The Nameplate Capacity of Customer's installed renewable generation system and equipment must not exceed 1,000 kW AC or 100% of Customer's contract demand which shall approximate Customer's maximum expected demand.

4. If Customer is not the owner of the premises receiving electric service from Company, Company shall have the right to require that the owner of the premises give satisfactory written approval of Customer's request for service under this Rider.

5. All environmental attributes, including but not limited to "renewable energy certificates" (RECs), "renewable energy credits" or "green tags", associated with the generation system shall be conveyed to Company until billing of a Distributed Energy Resource Program Rider DERP Charge is discontinued on all customer bills. Customer certifies that the environmental attributes have not and will not be remarketed or otherwise resold for any purpose, including another distributed energy resource standard or voluntary purchase of renewable energy certificates in South Carolina or in any other state or country for the Contract Period and any successive contract periods thereto.

6. If the electricity supplied to Customer by Company exceeds the electricity delivered to the grid by the customer-generator during a monthly billing period, the customer-generator shall be billed for the net electricity in kilowatt hours (kWh) supplied by Company plus any demand or other charges

under the applicable rate schedule or riders. If the electricity delivered to the grid by the customer-generator exceeds the electricity in kWh supplied by the utility during a monthly billing period, the customer-generator shall be credited for the excess kWh generated during that billing period.

7. Electricity delivered to the grid by Customer's renewable generation that exceeds the electricity delivered by Company is defined as Excess Energy. When used in conjunction with a time of use schedule, the TOU periods shall be specified in the applicable schedule and any Excess Energy shall apply first with the Excess Energy generated On-Peak kWh offsetting On-peak usage and then offsetting Off-peak usage. Any excess Off-Peak kWh shall only apply against Off-peak kWh usage. Any Excess Energy not used in the current month to offset usage shall carry forward to the next billing month.

8. Excess Energy shall be used to reduce electricity delivered and billed by Company during the current or a future month, except that for the March billing period any carry-over shall be compensated as described in the RATE paragraph below. In the event Company determines that it is necessary to increase the capacity of facilities beyond those required to serve Customer's electrical requirement or to install a dedicated transformer or other equipment to protect the safety and adequacy of electric service provided to other customers, Customer shall pay the estimated cost of the required transformer or other equipment above the estimated cost which Company would otherwise have normally incurred to serve Customer's electrical requirement, in advance of receiving service under this Rider.

9. The rates set forth herein are subject to Commission Order No. 2015-194, issued in Docket No. 2014-246-E pursuant to the terms of S.C. Code § 58-40-20(F)(4). Eligibility for this rate will terminate as set forth in that Order, and otherwise as specified above. The value of NEM generation eligible for this Rider shall be computed using the methodology contained in Commission Order No. 2015-194, in Docket No. 2014-246-E, and shall be updated annually by Company. The value of NEM generation for ~~2017~~ 2018 is $0.~~05013~~ 05033 per kWh for Schedules RES, R-TOUD, and SGS and $0.~~05017~~ 05025 for all other schedules.

RATE

All provisions of the applicable schedule and other applicable riders will apply to service supplied under this Rider, except as modified herein. For any bill month during which the Energy Charges are a net credit, the respective Energy Charges for the month shall be zero. Credits shall not offset the Basic Facilities Charge or the Demand Charge (if applicable). In addition to all charges in the applicable rate schedule for Customer's net electrical usage, the following credit may be applicable annually:

Annual Credit for Excess Generation –

If Customer has Excess Energy after offsetting usage as of the date of the March billing, Company shall pay Customer for the amount of the accumulated Excess Energy times a rate of $0.04290 per kWh, after which the amount of Excess Energy shall be set to zero.

MINIMUM BILL

The monthly minimum bill for customers receiving service under this Rider shall be no less than Basic Facilities Charge from the applicable rate schedule and riders plus, if applicable, any of the following Charges: the Demand Charge, the Off-peak Excess Demand Charge, and the Extra Facilities Charge.

METERING REQUIREMENTS

~~Customer must provide access and designate a location on the load side of the billing meter for Company to furnish, install, own and maintain metering with 15-minute interval capability to record 100% of Customer's generator output. At Company's sole option, the generator meter requirement may be waived for customers served under a net metering rider on or before December 31, 2015.~~ Company will ~~also~~ furnish, install, own and maintain a billing meter to measure the kilowatt demand delivered by Company to Customer, and to measure the net kWh purchased by Customer or delivered to Company. For renewable generation capacity of 20 kW AC or less, the billing meter will be a single, bi-directional meter which records independently the net flow of electricity in each direction through the meter, unless Customer's overall electrical requirement merits a different meter. For larger renewable generation capacities, Company may elect to require two meters with 15-minute interval capabilities to separately record Customer's electrical consumption and the total generator output, which will be electronically netted for billing. Customer grants Company the right to install, operate, and monitor special equipment to measure Customer's generating system output, or any part thereof, and to obtain any other data necessary to determine the operating characteristics and effects of the installation. All metering shall be at a location that is readily accessible by Company.

SAFETY, INTERCONNECTION AND INSPECTION REQUIREMENTS

This Rider is only applicable for installed renewable generation systems and equipment that complies with and meets all safety, performance, interconnection, and reliability standards established by the Commission, the National Electric Code, the National Electrical Safety Code, the Institute of Electrical and Electronic Engineers, Underwriter's Laboratories, the Federal Energy Regulatory Commission and any local governing authorities. Customer must comply with all liability insurance requirements of the Interconnection Standard.

POWER FACTOR

Customer's renewable generation must be operated to maintain a 100% power factor, unless otherwise specified by Company. When the average monthly power factor of the power supplied by Customer to Company is other than 100%, the Low Power Factor Adjustment stated in Company's Service Regulations may be applicable. Company reserves the right to install facilities necessary for the measurement of power factor. Company will not install such equipment, nor charge a Low Power Factor Adjustment if the renewable generation system is less than 20 kW AC and uses an inverter.

CONTRACT PERIOD

Customer shall enter into a contract for service under this Rider for a minimum original term of one (1) year, and shall automatically renew thereafter, except that either party may terminate the contract after one year by giving at least sixty (60) days prior notice of such termination in writing.

Company reserves the right to terminate Customer's contract under this Rider at any time upon written notice to Customer in the event that Customer violates any of the terms or conditions of this Rider, or operates the renewable generation system and equipment in a manner which is detrimental to Company or any of its customers. In the event of early termination of a contract under this Rider, Customer will be required to pay Company for the costs due to such early termination, in accordance with Company's South Carolina Service Regulations.